UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 07542

CSAH NO. 9

OVER THE

BLUE EARTH RIVER

DISTRICT 7 - BLUE EARTH COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 135)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 07542, Piers 1 through 4, were found to be in good condition with no defects of structural significance observed. Minor defects observed included a minor area of section loss on Pier 3 and light scaling along the center of all piers. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) Light scaling with exposed aggregate was observed along center section of all of the piers with a maximum penetration of 1/4 inch.

(B) An area of section loss was observed 6 inches below the waterline on the southeast corner of Pier 1 and was 1 foot high by 6 inches wide with up to 1 inch of penetration.

(C) A 2 foot diameter tree trunk was observed at the upstream nose of Pier 3, extending from the channel bottom to 5 feet above the channel bottom.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 07542

Feature Crossed: The Blue Earth River

Feature Carried: CSAH No. 9

Location: District 7 - Blue Earth County

Bridge Description: Bridge No. 07542 consists of a five span steel beam structure supported by two concrete abutments on piles and four concrete piers on piles, with the piers numbered 1 to 4 starting from the west.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Clayton G. Brookins, Michelle D. Koerbel

Date: November 2, 2002

Weather Conditions: Sunny, ± 30^{o} F

Underwater Visibility: ±1 foot

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 through 4.

General Shape: The piers consist of oblong rectangular shafts with rounded noses. The piers are supported by rectangular footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 17 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier at the upstream end of Pier 4.

Water Surface: The waterline was approximately 30.0 feet below reference. Waterline Elevation = 873.9.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

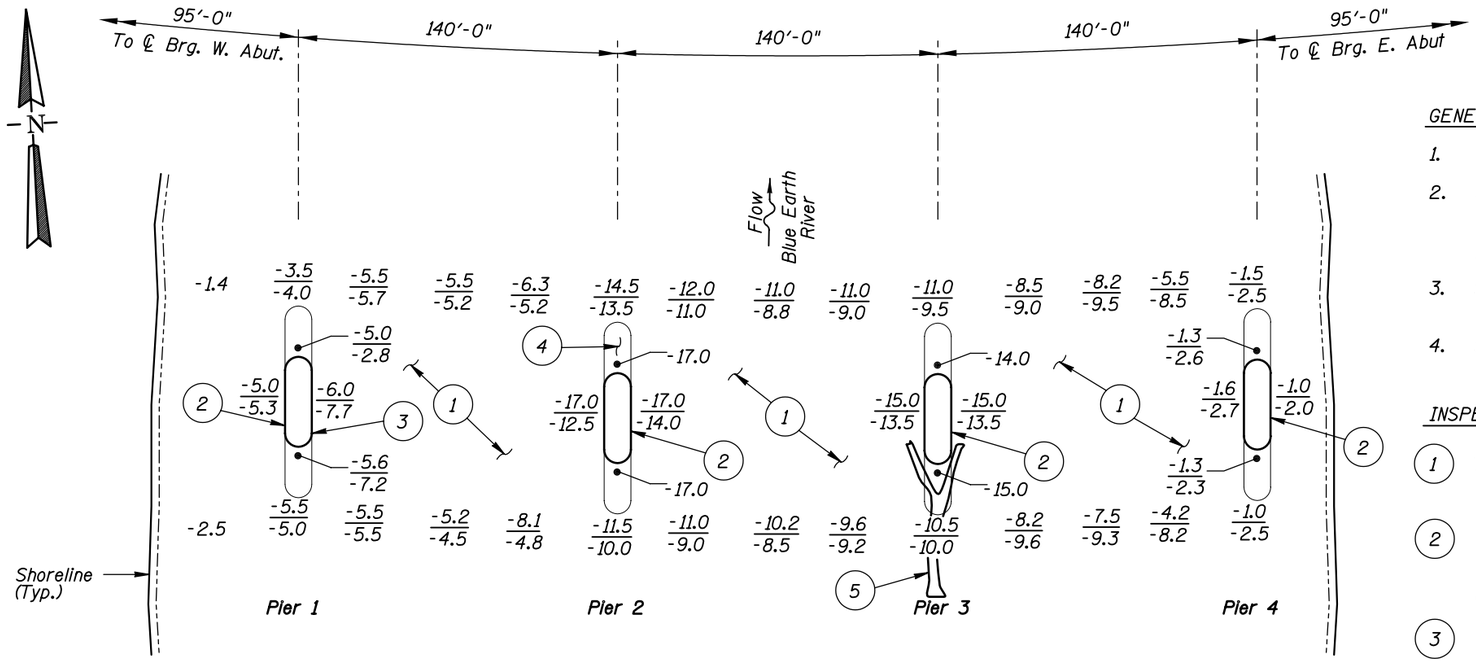
Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/11/02

Item 113: Scour Critical Bridges: Code J/91

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes __X__ No



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 through 4 were inspected underwater.
2. At the time of inspection on November 2, 2002, the waterline was located approximately 30.0 feet below the top of the pier cap at the upstream end of Pier 4. This corresponds to a waterline elevation of 873.9 based on the previuous report dated September 20, 1997.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

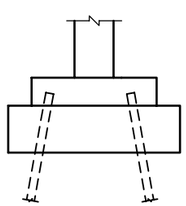
(1) The channel bottom material consisted of soft silt with up to 2 feet of probe rod penetration.

(2) Light scaling with exposed aggregate was observed along center section of all of the piers with a maximum penetration of 1/4 inch.

(3) An area of section loss was observed 6 inches below the waterline on the southeast corner of Pier 1 and was 1 foot high by 6 inches wide with up to 1 inch of penetration.

(4) The remains of the sheet pile cofferdam used during original construction were observed along the downstream nose of the pier.

(5) A 2 foot diameter tree trunk was observed at the upstream nose of the pier and extended from the channel bottom to 5 feet above the channel bottom.



TYPICAL END VIEW OF PIERS

Legend

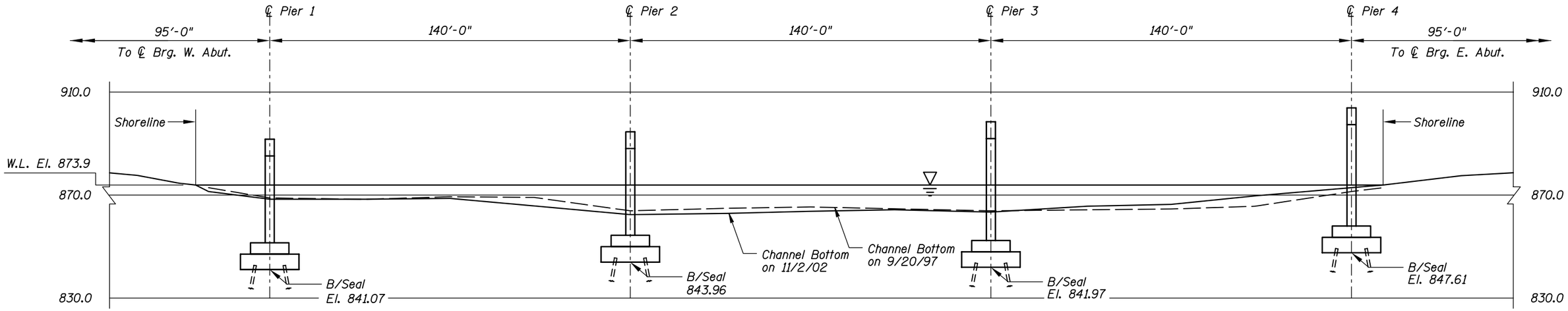
-2.0	Sounding Depth from Waterline (11/2/02)
-5.2	Sounding Depth from Waterline (9/20/97)

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

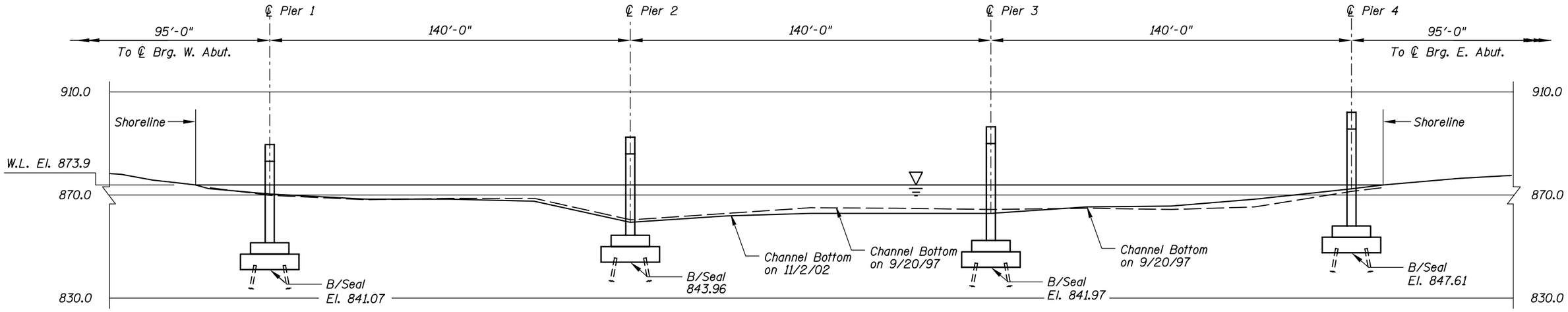
STRUCTURE NO. 07542
OVER THE BLUE EARTH RIVER
DISTRICT 7, BLUE EARTH COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: NOV. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120135		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

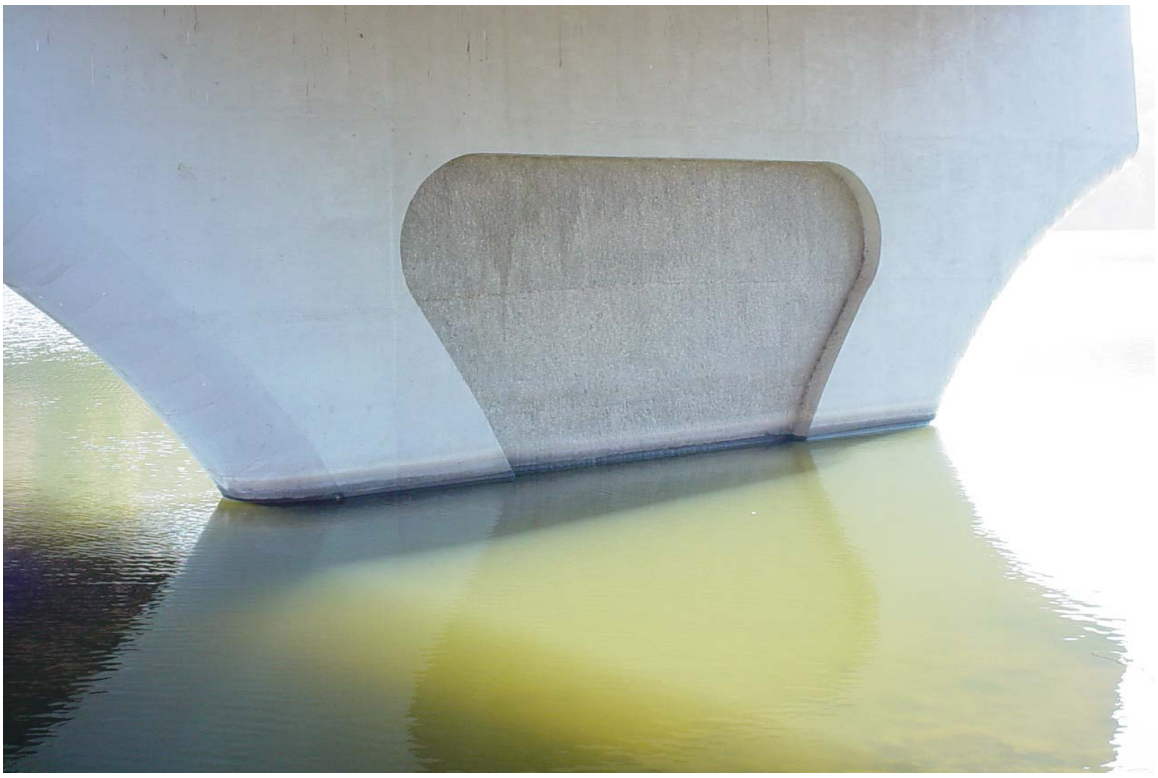
STRUCTURE NO. 07542
OVER THE BLUE EARTH RIVER
DISTRICT 7, BLUE EARTH COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	**COLLINS ENGINEERS, INC.**	Date: NOV. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=40'
Code: 35120135		Figure No.: 2

Photograph 1. Overall View of the Structure, Looking Southwest.

Photograph 2. View of the West Embankment, Looking Southwest



Photograph 3. View of Pier 1, Looking Southeast.

Photograph 4. View of Pier 2, Looking Southeast.

Photograph 5. View of Pier 3, Looking Southeast.

Photograph 6. View of Pier 4, Looking Northwest.

Photograph 7. View of the East Embankment, Looking Southeast

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: November 2, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 07542 WEATHER: Sunny, "30° F
WATERWAY CROSSED: The Blue Earth River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER
PERSONNEL: Clayton G. Brookins, Michelle D. Koerbel
EQUIPMENT: Scuba, U/W Light, Lead Line, Probe Rod, Scraper, Sounding Pole, Camera
TIME IN WATER: 10:00 A.M.
TIME OUT OF WATER: 10:55 A.M.
WATERWAY DATA: VELOCITY Negligible/None
VISIBILITY "1 foot
DEPTH 17 feet maximum at Pier 2
ELEMENTS INSPECTED: Piers 1 through 4
REMARKS: Overall, the concrete below water was in sound and good condition with no defects of structural significance observed. A minor area of section loss was observed 6 inches below the waterline on the southeast corner of Pier 1 and was 1 foot high by 6 inches wide with up to 1 inch of penetration. The concrete along the center portion of all the piers exhibited light scaling with up to 1/4 inch penetration and exposed aggregate. A large tree (timber drift) was lodged against the upstream nose of Pier 3. The channel bottom appeared stable with no evidence of significant scour.

FURTHER ACTION NEEDED: _____ YES ___X___ NO

Reinspect the submerged substructure at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 07542
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Blue Earth River

INSPECTION DATE November 2, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	6.0’	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	Pier 2	17.0’	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	Pier 3	15.0’	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	Pier 4	1.6’	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete below water was in sound and good condition with no defects of structural significance observed. A minor area of section loss was observed 6 inches below the waterline on the southeast corner of Pier 1 and was 1 foot high by 6 inches wide with up to 1 inch of penetration. The concrete along the center portion of all the piers exhibited light scaling with up to 1/4 inch penetration and exposed aggregate. A large tree (timber drift) was lodged against the upstream nose of Pier 3. The channel bottom appeared stable with no evidence of significant scour.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.